

THE PLAGUE AT GRANADA, 1348 – 1349: IBN AL-KHATIB AND IDEAS OF CONTAGION

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HISTORICAL relations between cause and effect can be difficult to ascertain, especially when an event identified as a single effective cause produces a variable effect. The Black Death of 1348–1349 devastated Western Europe. Most authorities concur that the Black Death was the death knell of Siena as an important city, but Florence survived to flourish again.¹ Mute testimony of Siena's decline are the remains of the walls of the unfinished enlargement of its cathedral (Figure 1) — “Bare ruined choirs where late the sweet bird sang.” Yet the same epidemic of bubonic plague struck Granada a few weeks later, and the Moors were able to complete the Alhambra during the reign of Mohammed V (1354–1359 and 1362–1391). We lack information upon which to calculate the mortality rate at Granada;² many records were destroyed when Ferdinand and Isabella ousted the Moors in 1492 after their hegemony of two and a half centuries. Only a few Islamic manuscripts survived; by the end of the 15th century; most of them were in the library of Phillip II's Escorial.

Ultrachristian Spain had little interest in Islamic culture, and not until 1863 did M. J. Müller, a German scholar, bring Ibn al-Khatib's manuscript on bubonic plague to the notice of the scholarly world.³ But Müller's call went unheard, possibly because he issued it at a meeting of the philosophy and philology section of the Royal Bavarian Academy of Science. At that time Pasteur's theory that germs cause disease was still unsettled. It was only a few years before Koch announced his postulates. It was the dawn of the modern era in bacteriology. Investigation of epidemics and how diseases spread were a major concern of medical scientists the world over, but their eyes were on the new discoveries of the present, not the past. The notion that a 14th century Moorish statesman-physician-poet could tell them anything of value was, to put it kindly, information they did not wish to have. Even today, Ibn al-Khatib's ideas are known only to a few scholars in medieval Islamic culture.

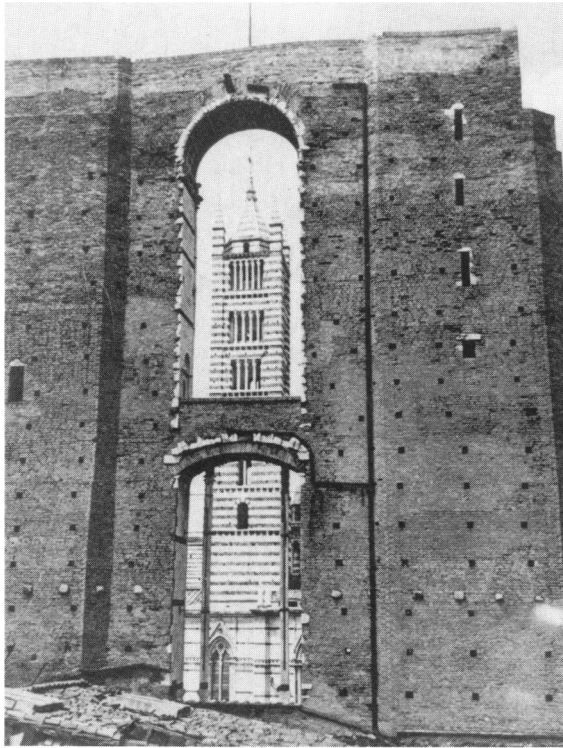


Fig. 1. View of the remains of the planned expansion of the cathedral at Siena, abandoned after the plague of 1348. The old campanile is seen through the arch in the roughly finished masonry.

Lisan-ad-Din Ibn al-Khatib (1313–1375) came from a family that migrated from Syria to Iberia during the eighth century. His father died at the battle of Salado in 1340, and shortly thereafter the young man whose educational attainments at Granada had marked him as promising entered the service of Yusuf I as secretary under the vizier Ali b. al-Djarryab. When the latter died of plague in January 1349 he was appointed head of the royal chancery with the title of vizier. He retained this office when Mohammed V succeeded Yusuf I in 1354. When Mohammed V was deposed from 1359 to 1362, Ibn al-Khatib was imprisoned, then set free to join his leader in exile in Morocco. He returned to power with Mohammed V in 1362 as vizier and chief dignitary of the court. He continued in office until 1372, when a cumulation of intrigues against him

made it convenient to take advantage of an inspection tour of fortifications in western Granada and slip across the border to Ceuta. His enemies had charged him with heresy as well as other crimes against the state. He remained safe at Ceuta for a few years, but ultimately his enemies at Granada proved too powerful. He was returned there, imprisoned, and tried before a private court. No conclusive verdict was pronounced, but he was secretly strangled in prison in 1375.

Ibn al-Khatib was a polymath for his time and place. Distinguished in many branches of learning, he wrote on history, philosophy, mysticism, and medicine, as well as a considerable amount of poetry. His monograph *Al-Ihata fī ta'rikh Gharnata* is a valuable source for the early history and topography of Granada, and his *Djaysh al-tawshih* is considered a fine anthology of poetry. Of even greater importance is his treatise on bubonic plague, *Muqni'at as-sa'il 'an marad al-ha'il* (Escorial MS. No. 1785, fols. 39a-48b), probably written between 1359 and 1362 during his exile in Morocco. It was certainly written after 1352 because it mentions Ibn Battutah's account of the plague in the Middle East, written after that savant's visit to Granada in 1349–1352.

Greek and Roman medical writers had explained epidemics of infectious disease by the concept of miasma, noxious pollution of the atmosphere, cf. the etymology of *malaria*. Varro may have been prescient during the first century B.C. when in *De Re Rustica* he considered that placement of a country house should take into account:

[Q]uod crescunt animalia quaedam minuta, quae no possunt oculi consequi, et per aera intus in corpus per os ac nares perveniunt atque efficiunt difficiles morbos. (Because certain tiny animals grow, which the eyes cannot detect and which pass through the air and into the body through the mouth and nostrils and produce refractory diseases.)⁴

In the next century Columella echoed these ideas, advising that farm buildings be situated at a distance from marshland because the marshes emit a harmful virus (*noxium virus*) that breeds swimming and crawling pests that produce human disease. Such tentative modifications of the miasma theory could not be tested until the latter half of the 19th century, and it would be claiming too much to suggest that Varro's idea of living, airborne, invisible animal infectious agents foreshadowed modern bacteriology or that Columella's *virus* bore a conceptual relationship to the viruses that 20th century scientists have detected. Although the seeds of the animalcule theory of infection can be read into the text today, later Greek and Roman writers generally adhered to miasma theory, an idea

that coincided neatly with the humoral theory of disease, popularized in the continuing Galenic tradition that dominated both Christian and Moslem medicine until the 17th century.

The miasmal theory of plague was congenial to Moslem theology which held that the disease is a martyrdom, a mercy from God for a Moslem, and a punishment for an infidel. It followed that a Moslem should neither enter nor flee from a plague-stricken place, and that there was no contagion. Orthodox Islamic medical thought accepted the premise and the reasoning from it. Bound with Ibn al-Khatib's *Muqni'at* in Escorial MS. No. 1785 are two other Andalusian treatises on the plague. The first is *Tahsil al-gharad al-qasid fi tafil al-marad alwafid* by Ahmad ibn Ali ibn Khatimah,² a physician and poet from Almeria, probably written early in 1349, described as the fullest contemporary medical explanation of plague written in Arabic.⁵ The other *Tahqiq an-naba' 'an amr al-waba'* (fols. 106a-111a) is a layman's guide to treating plague victims written by Mohammed ibn Ali ash-Shaquri, a physician of Granada who was one of Ibn al-Khatib's pupils. Both of these subscribe to the miasmal theory without reservation. It has been suggested that Ibn al-Khatib wrote his *Muqni'at* as a rebuttal to Ibn-Khatimah's treatise, a plausible but undocumented theory.

Medieval man feared sudden death and death at an early age much as 20th century man fears nuclear catastrophe and old age. It was easy for the faithful to ascribe pestilence to divine wrath and punishment upon a sinful people, a feeling greatly reinforced by the evident impotence of human efforts to control the spread of the disease. Other supernatural causes were invoked to account for epidemics of plague, notable astrological portents, and such ideas were often combined. The *Compendium de epidemica*, prepared in 1348 for Philip IV by the Paris College of Physicians, a faculty noted for its orthodoxy, presented a mixture of astral and miasmal doctrine. Hirst⁶ summarizes it briefly, if not intelligibly, for modern readers:

[T]he state of heavenly bodies led to a pernicious corruption of the air through vapours drawn up from the southern seas and carried as a fog, with great dampness and heat, to many places on the earth. The poisonous activity lasted as long as the sun remained in the sign of the Lion.

Shakespeare echoes this idea in *Timon of Athens*, written in the first decade of the 17th century; the misanthrope tells Alcibiades to "Be as a planetary plague, when Jove/Will o'er some high-viced city hang his poison/In the sick air." (IV, iii, 109-111). Regardless of religious ortho-

doxy, 14th century physicians had an implicit idea that plague was communicable. The medical faculty of Paris warned healthy citizens to avoid the poisoned air exhaled by the sick and to keep a distance from them. Gentile de Foligno, who died of the disease in 1348, noted that plague passed from one person to another. So even did Ibn Khatimah whose orthodoxy compelled him to ascribe the disease to the will of Allah. It remained for Ibn al-Khatib to make the idea of contagion explicit and to base his argument on personal, empirical observation rather than received orthodox beliefs.

The *Muqni'at* provides a clear clinical description of the plague, explaining (as one would expect) the clinical features of the disease, especially predisposition to it, in terms of the prevailing humoral theories of the era. Ibn al-Khatib distinguished between the bubonic and pneumonic forms of the infection and recommended a number of measures for prophylaxis and treatment, none of which differs materially from those advised by other late medieval writers. What distinguishes his treatise is his emphasis on contagion (*al-adwa*). Freely translated, the passage reads:

It becomes clear to anyone who has diagnosed or treated the disease that most of the individuals who have had contact with a plague victim will die, whereas the man who has had no exposure will remain healthy. A garment or vessel may carry infection into a house; even an earring (*al-halak*) can prove fatal to the man who has put it in his ear. The disease can make its first appearance in a single house of a given town, then spread from that focus to other persons—neighbors, relatives, visitors. The disease can break out in a coastal town that had been free of the disease until a plague victim landed there, coming across the sea from a town where plague is raging. The date at which plague appears in the town coincides with [i.e. occurs a few days after] the debarkation of this carrier.

Many people remained in good health who kept themselves in isolation from the outside world, for example the pious Ibn Abi-Madyan in Salé. He believed in contagion; therefore he laid by a store of provisions and bricked up his house, sequestering his large family. The town was severely stricken, but no one in his household took ill. There are many accounts of communities remote from highways and commerce that remained unscathed. There is also the remarkable example of the prisoners in the Arsenal at Seville who were unaffected even though the city itself was hard hit. Other reports tell us that itinerant nomads who live in tents in North Africa remained free of disease because the air is not shut in, and the corruption from it is only mildly infectious.

This is a coherent, internally consistent description of the transmission of disease by human contact. It relates contagion from a single infected person to a larger number, at first within a given household, then more

widely to people exposed to that household. That the initial infection appeared in seaports and was transmitted by sailors from commercial ships coincides with the known distribution of the plague's attack, first appearing at Messina in Sicily in October 1347, then more or less simultaneously at Genoa and Venice, with a third portal of entry at Pisa a few weeks later. Ibn al-Khatib also cites several examples of how infection was avoided by one or another form of isolation. The image of an earring as an object that could carry infection is characteristically Levantine.

What is lacking, of course, is identification of the organism that caused the disease, the insect vector (fleas), and the animal reservoir (rats). Varro's notion of "tiny animals ... that the eye cannot detect" was unknown to Ibn al-Khatib. Latin literature was then as closed a book to Islamic scholars as Islamic medical writings were to 19th century bacteriologists and epidemiologists. Not until 1546 with Frascastorius's *De contagione* was a unified theory of infection and contagion broached, and it was not until 1658 that Athanasius Kircher⁷ observed bacilli in the blood of plague victims through a primitive microscope.

How did Ibn al-Khatib reconcile his idea that plague was transmissible with the orthodox view, the revealed work (*ash-har'*), that plague was not contagious? He replied: "That infection exists is confirmed by experience, investigation, insight, personal observation,⁸ and reliable reports. These are the elements of proof." He was confident that received doctrine could be refuted by empirical observations if they were carefully made and confirmed by their recurrence and by independent observers. But he was experienced enough a diplomat and dialectician to anticipate the form rebuttal from strict constructionists would take. He continued: "One may not ignore the principle that a proof taken from tradition (*Hadith la-adwa*), if observation and inspection show the contrary, must be interpreted allegorically." To the fundamentalist mind, allegorical interpretation of what it perceives as literal truth is anathema. To the orthodox mind, applying the test of reason to faith is likewise anathema. In an authoritarian-fundamentalist society that is enough for a charge of heresy.

Precisely why Ibn al-Khatib was secretly strangled in a Granada prison cell in 1375 is not known, but the charge of heresy was probably supplemented by charges of malfeasance in office. Lest we judge his executioners too harshly, we should recall that Christians burnt Michael Servetus at the stake in 1553 and dealt with Giordano Bruno in like fashion in 1600.

NOTES AND REFERENCES

1. Bowsky, W. M.: The impact of the Black Death upon Siennese government and society. *Speculum* 39:1-34, 1964. Bowsky calculates the mortality at Siena as in the order of 50% of the population, but recovery from the effects of such a loss depends not only upon the actual number of survivors but also upon the stability of local government, capacity for economic reconstruction, and general social morale. Millard Meiss's *Painting in Florence and Siena after the Black Death* (Princeton University Press, 1951) furnishes a detailed account of the impact of the epidemic on the psychology of the survivors and its effect on the visual arts. Florence flourished and Siena declined because socioeconomic factors favored the former.
2. Ibn Khatimah, A.: Tahsil al-gharad al-qasid fi tafsil al-marad al-wafid. Escorial Ms. No 1785, fol. 49a-115b. According to Ibn Khatimah there were 70 deaths daily at Almeria at the peak of the epidemic compared to 1,500 a day at Valencia. Ibn al-Khatib, based at Granada, provides no specific figures for the death rate in his city but claims that seven tenths of mankind perished, probably an exaggerated figure. Mortality may well have been higher at Granada than in other cities of Andalusia, but perhaps the truth lies in between.
3. Müller, M. J.: Ibnul-khatibs Bericht über die Pest. *Sitzungsber. königl. bayer. Akad. Wissensch.* 4:1-34, 1863. Müller provides a transcription of Ibn al-Khatib's text and his comments, but not a translation.
4. Jarcho, S.: Medical and nonmedical comments on Cato and Varro, with historical observations on the concept of infection. *Trans. Coll. Phys. Phila.* 43:372-78, 1976.
5. Dols, M. W.: *The Black Death in the Middle East*. Princeton, Princeton University Press, 1977. Appendix III: The Arabic manuscript sources for the history of plague from the Black Death to the nineteenth century, pp. 320-335.
6. Hirst, L. F.: *The Conquest of Plague: A Study of the Evolution of Epidemiology*. Oxford, Clarendon Press, 1953. p. 26. The astrological-humoral explanation was that there had been a conjunction of Saturn, Jupiter, and Mars in the house of Aquarius. The conjunction of Saturn and Jupiter notoriously caused death and disaster, while the conjunction of Mars and Jupiter spread pestilence in the air. Jupiter, being warm and humid, was calculated to draw up evil vapors from the earth and water which Mars, hot and dry, then kindled into infective fire.
7. Kircher, A.: *Scrutinium physico-medici contagiosae luis; quae dicitur pestis, &c.* Rome, Mascardi, 1658. There is reasonable doubt that Kircher's 32 power lens system could have shown him the micro-organism *Pasteurella pestis*, though he may well have seen red and white blood cells. However, he was the first to write of *contagium animatum*, i.e., infection by a living organism, whereas Frascastorius's term *seminaria contagionum* was described and defined in physical terms. The decision of priority for the germ theory depends upon whether the arbiter is a materialist or a vitalist.
8. Müller³ glosses this text as "Die Existenz der Ansteckung steht fest durch die Erfahrung, die Forschung, die Sinneswahrnehmung, die Autopsie und verbürgte Kunden." "Autopsie" does not imply postmortem dissection (Sektion) but must be translated in its etymological sense, "To see for one's self." This usage was common in the mid-19th century. The sightseeing omnibus from London to Brighton was known as the autopsy bus.